



Test Report Of ANSI/IES LM-79-19

APPROVED METHOD FOR OPTICAL AND ELECTRICAL MEASUREMENTS OF SOLID-STATE LIGHTING PRODUCTS

Report Number..... : N02A22120503L00201

Client..... : HK Lighting Group

Address..... : 2151 Anchor Ct, Thousand Oaks, CA, USA

Test Model..... : ZXL38i-VW

Brand Name..... : HK Lighting Group

Testing Laboratory... : Guangdong Meide Testing Technology Co., Ltd.

Address..... : 1st floor, B Area, Jinbaisheng Industrial Park, Headquarters 2 Road, Songshan
Lake Hi-tech Industrial Development Zone, Dongguan City, Guangdong Pr., China.

Testing Location..... : As above

Date of receipt..... : Jan. 04, 2023

Date of test : Jan. 04, 2023

Date of report..... : Mar. 13, 2023

Tested by:

Jarvis Zhang

Jarvis Zhang/ Test Engineer

Checked by:

Sandy Chen

Sandy Chen/ Project Engineer

Approved by:

Jessie Li

Jessie Li/ Technical Manager

Note 1: The test data was only valid for the test sample(s). This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or use in part without prior written consent from Guangdong Meide Testing Technology Co., Ltd. This report must not be used by the customer to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

Note 2: This report does not imply product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

1. Product Description for Equipment under Test(EUT)

Representative (Tested) Model:	ZXL38i-VW
Manufacturer:	HK Lighting Group
Product Type:	AREA ACCENT LIGHT
Rated Voltage/Frequency:	120V AC, 60Hz
Rated Power:	52W
Rated luminous flux:	4300lm
Nominal CCT:	3000K
LED Manufacturer:	NICHIA
LED Model No.:	NICHIA 130

2. Standards Used

- ANSI/IES LM-79-19:APPROVED METHOD:OPTICAL AND ELECTRICAL MEASUREMENTS OF SOLID-STATE LIGHTING PRODUCTS

3. Test equipment list

Test Equipment	Serial No.	Model No.	Calibration due date
Full-field Speed Goniophotometer	MD-E028	GO-R5000	2023/09/17
Digital Power Meter	MD-E001	PF2010	2023/09/17
AC Testing Power Source	MD-E002	DPS1060	2023/09/17
Total Spectral Radiant Flux Standard Lamp	MD-E007	D908S	2023/10/13

Statement of Traceability: Guangdong Meide Testing Technology Co., Ltd. attested that all calibration has been performed using suitable standards traceable to national primary standards and International System of Unit(SI).

4. Test Method

Requirements of Ambient Condition

Product was tested with no seasoning. All stabilization and measurements were made in compliance with ANSI/IES LM-79-19. The product was operated at rated voltage or at voltage required by manufacturer. The ambient temperature of the sample was maintained at $25^{\circ}\text{C} \pm 1.2^{\circ}\text{C}$ during measurement. And relative humidity between 10% and 65%.

Goniophotometer System

The sample was tested according to the ANSI/IES LM-79-19.

Photometric paramters were measured using a type C goniophotometer and software. The samples were operated at rated voltage and was stabilized before measurement. Luminous flux, Luminous efficacy, zonal flux were calculated from the software taken at 1° vertical intervals and 22.5° horizontal intervals. Photometric distance was more than five times of the Largest dimension of the test SSL product.

5. Goniophotometer Test results

5.1 Test Data

Test Ambient Temperature	25.2°C	Test orientation	Downward
Operate time(Min.)	90	stabilization time(Min.)	30

Electrical Measurement

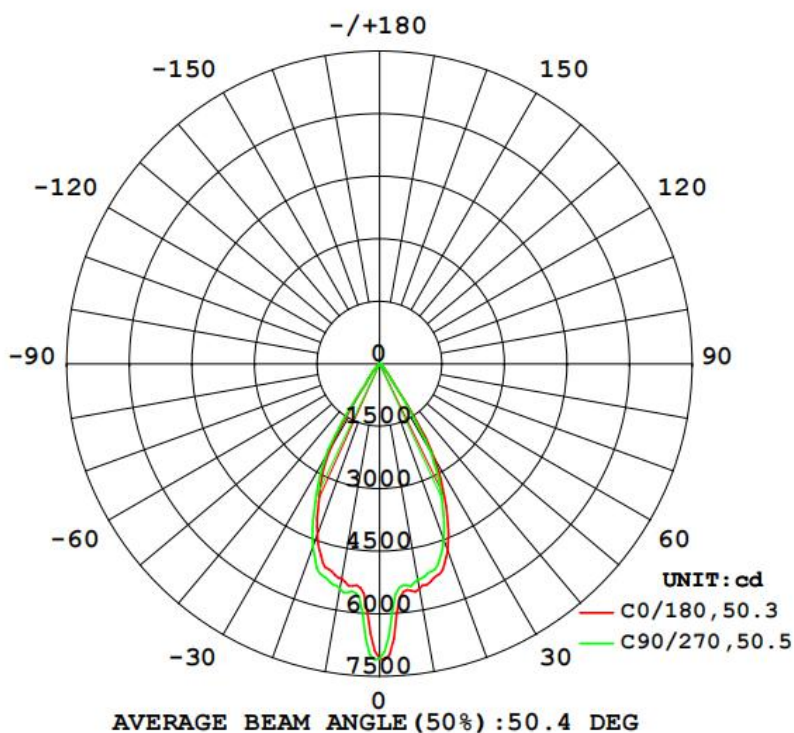
Input Voltage (V)	Frequency (Hz)	Input Current(A)	Power Factor	Power(W)
120.1	60	0.4288	0.983	50.62

Optical Measurement

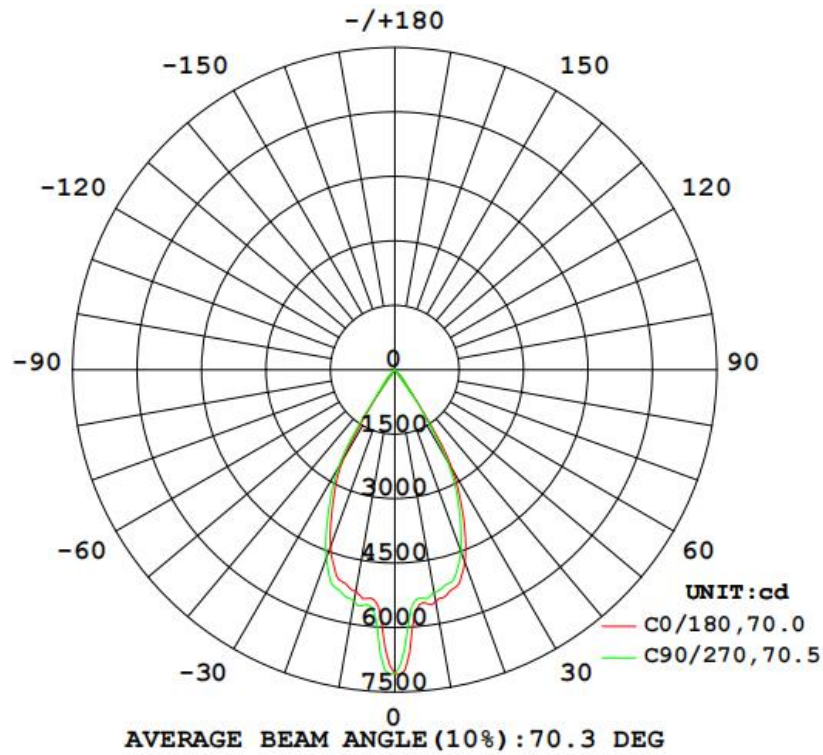
Luminous Flux (lm)	Efficacy(lm/W)	Imax (cd)	Spacing Criteria (C0/180°)	Spacing Criteria (C90/270°)
4390.83	86.75	7135	0.75	0.79

5.2 Luminous Intensity Distribution

5.2.1 Beam Angle (50%) Mode:



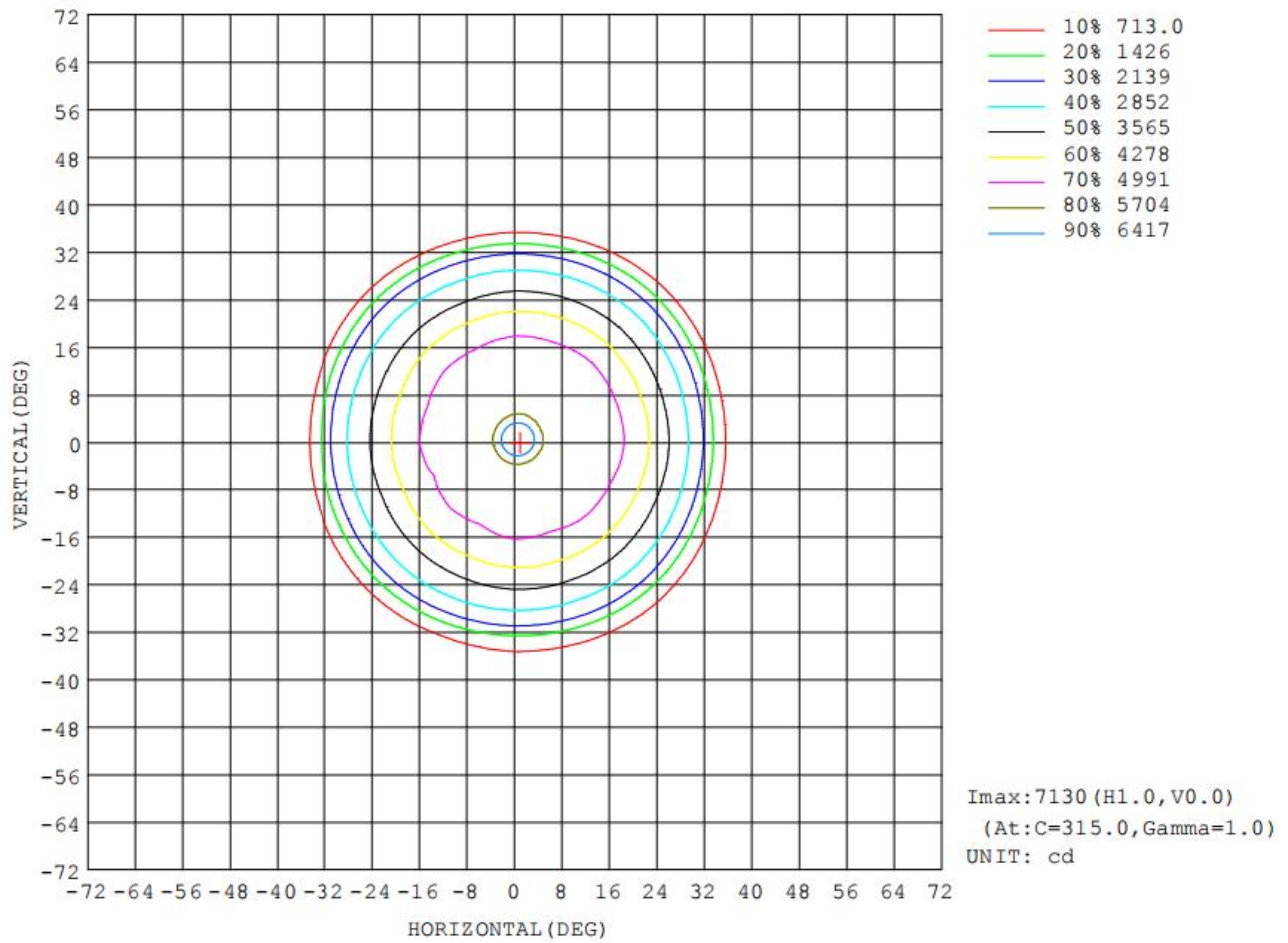
5.2.2 Beam Angle (10%) Mode:



5.3 Zonal Flux Diagram

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum, lamp
10	5480	5348	5252	5205	5237	5306	5476	5586	0- 10	534.5	534.5	12.2,12.2
20	4768	4628	4498	4386	4376	4521	4677	4795	10- 20	1428	1963	44.7,44.7
30	2644	2591	2491	2371	2437	2496	2624	2709	20- 30	1631	3593	81.8,81.8
40	325.6	335.5	310.7	283.4	290.7	294.5	305.3	321.2	30- 40	634.7	4228	96.3,96.3
50	39.28	39.17	38.38	36.86	38.58	40.22	38.38	38.64	40- 50	100.4	4329	98.6,98.6
60	20.56	20.12	19.41	19.61	21.44	23.14	21.73	21.96	50- 60	26.14	4355	99.2,99.2
70	15.87	15.67	14.88	14.68	16.00	17.29	16.33	16.59	60- 70	18.19	4373	99.6,99.6
80	5.130	3.850	2.574	2.271	2.929	4.507	5.320	5.710	70- 80	10.88	4384	99.8,99.8
90	0.0389	0.0294	0.0294	0.0282	0.0382	0.0382	0.0731	0.0974	80- 90	1.106	4385	99.9,99.9
100	0.0293	0.0273	0.0290	0.0282	0.0446	0.0405	0.0401	0.0392	90-100	0.0378	4385	99.9,99.9
110	0.0335	0.0312	0.0350	0.0328	0.0475	0.0447	0.0444	0.0418	100-110	0.0377	4385	99.9,99.9
120	0.1331	0.1381	0.1493	0.1528	0.1430	0.1356	0.1283	0.1185	110-120	0.0656	4385	99.9,99.9
130	0.6068	0.6166	0.6119	0.6641	0.8438	0.7910	0.7332	0.7336	120-130	0.3262	4385	99.9,99.9
140	1.386	1.318	1.308	1.499	2.519	2.272	1.901	2.168	130-140	0.9285	4386	99.9,99.9
150	2.111	1.921	1.799	2.178	4.272	3.918	3.264	3.730	140-150	1.480	4388	99.9,99.9
160	2.988	2.687	2.644	2.984	5.232	5.108	4.454	4.661	150-160	1.558	4389	100,100
170	3.365	3.037	3.227	3.457	5.122	5.097	4.778	4.844	160-170	1.139	4390	100,100
180	4.379	4.218	4.468	4.704	4.420	4.237	4.310	4.572	170-180	0.3964	4391	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

5.4 Isocandela Diagram



5.5 Luminous Distribution Intensity Data

Table--1 UNIT: cd

C (DEG) y (DEG)	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5			
0	7069	7069	7069	7069	7069	7069	7069	7069	7069	7069	7069	7069	7069	7069	7069	7069			
5	5624	5550	5489	5442	5396	5376	5354	5367	5390	5433	5485	5552	5637	5697	5712	5673			
10	5480	5405	5348	5272	5252	5192	5205	5190	5237	5253	5306	5367	5476	5543	5586	5542			
15	5272	5176	5163	5084	5113	5003	5035	4981	5052	5045	5135	5144	5264	5277	5339	5288			
20	4768	4670	4628	4522	4498	4399	4386	4332	4376	4405	4521	4558	4677	4713	4795	4770			
25	3781	3699	3658	3576	3541	3447	3407	3374	3411	3434	3517	3554	3667	3724	3788	3781			
30	2644	2601	2591	2534	2491	2401	2371	2374	2437	2420	2496	2531	2624	2668	2709	2681			
35	897	852	877	831	786	602	575	575	598	619	667	710	800	865	885	877			
40	326	326	335	324	311	294	283	280	291	291	294	292	305	311	321	327			
45	126	124	125	120	119	109	104	99.1	100	101	107	109	114	117	122	125			
50	39.3	38.0	39.2	37.6	38.4	36.7	36.9	37.5	38.6	38.6	40.2	37.9	38.4	37.2	38.6	38.1			
55	28.7	26.8	28.0	27.4	26.8	25.8	25.7	26.8	28.6	29.6	31.1	28.9	29.7	29.3	30.6	29.8			
60	20.6	19.7	20.1	19.5	19.4	19.0	19.6	20.2	21.4	22.0	23.1	22.0	21.7	21.3	22.0	21.1			
65	17.8	17.4	17.5	16.8	17.1	16.8	17.6	17.8	18.7	19.1	20.2	19.4	19.1	18.5	18.9	18.2			
70	15.9	15.3	15.7	14.9	14.9	14.4	14.7	15.1	16.0	16.3	17.3	16.3	16.3	16.0	16.6	16.0			
75	10.8	10.0	10.2	9.56	9.68	9.37	9.69	9.97	10.9	10.9	12.0	11.1	11.2	11.0	11.5	11.0			
80	5.13	4.32	3.85	2.80	2.57	1.94	2.27	1.99	2.93	3.21	4.51	4.62	5.32	5.16	5.71	5.38			
85	1.01	0.85	0.93	0.78	0.81	0.67	0.77	0.64	0.80	0.74	0.87	0.80	0.99	0.87	1.03	0.91			
90	0.04	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.04	0.07	0.09	0.10	0.08			
95	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04			
100	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04			
105	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04			
110	0.03	0.03	0.03	0.03	0.04	0.03	0.03	0.03	0.05	0.05	0.04	0.05	0.04	0.04	0.04	0.04			
115	0.05	0.05	0.05	0.05	0.06	0.06	0.05	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06			
120	0.13	0.14	0.14	0.14	0.15	0.15	0.15	0.15	0.14	0.14	0.14	0.13	0.13	0.12	0.12	0.12			
125	0.32	0.33	0.34	0.34	0.35	0.35	0.36	0.36	0.38	0.37	0.36	0.35	0.34	0.33	0.32	0.32			
130	0.61	0.61	0.62	0.60	0.61	0.62	0.66	0.67	0.84	0.82	0.79	0.75	0.73	0.72	0.73	0.74			
135	0.97	0.97	0.94	0.94	0.92	0.98	1.04	1.04	1.59	1.55	1.47	1.36	1.30	1.31	1.37	1.42			
140	1.39	1.37	1.32	1.32	1.31	1.42	1.50	1.50	2.52	2.44	2.27	2.06	1.90	2.00	2.17	2.27			
145	1.77	1.75	1.65	1.53	1.62	1.75	1.88	1.91	3.50	3.33	3.20	2.83	2.60	2.74	3.03	3.19			
150	2.11	2.06	1.92	1.70	1.80	2.05	2.18	2.26	4.27	4.17	3.92	3.56	3.26	3.37	3.73	4.00			
155	2.57	2.48	2.27	2.17	2.16	2.48	2.58	2.70	4.88	4.80	4.63	4.29	3.88	3.72	4.24	4.61			
160	2.99	2.87	2.69	2.53	2.64	2.85	2.98	3.07	5.23	5.21	5.11	4.72	4.45	4.38	4.66	4.99			
165	3.25	3.16	3.03	2.88	3.04	3.30	3.39	3.32	5.28	5.28	5.17	4.91	4.65	4.56	4.75	5.10			
170	3.36	3.22	3.04	3.04	3.23	3.44	3.46	3.34	5.12	5.13	5.10	4.87	4.78	4.73	4.89	5.08			
175	3.69	3.64	3.49	3.53	3.69	3.90	3.88	3.88	4.73	4.74	4.76	4.58	4.65	4.68	4.81	4.86			
180	4.38	4.29	4.22	4.40	4.47	4.62	4.70	4.68	4.42	4.43	4.24	4.17	4.31	4.41	4.57	4.62			

6. Photo of sample

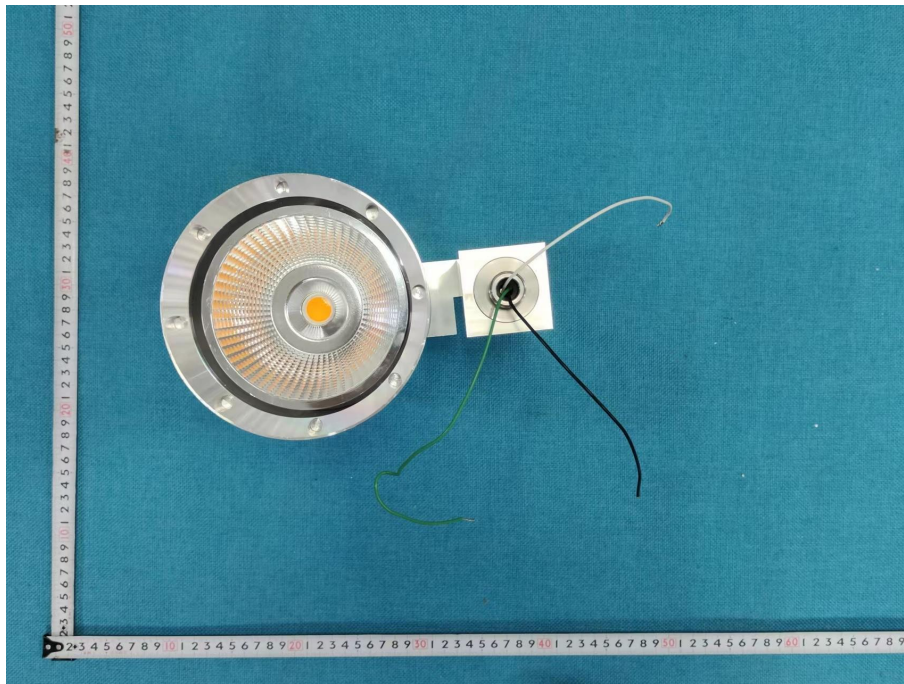


Figure 1 Overview

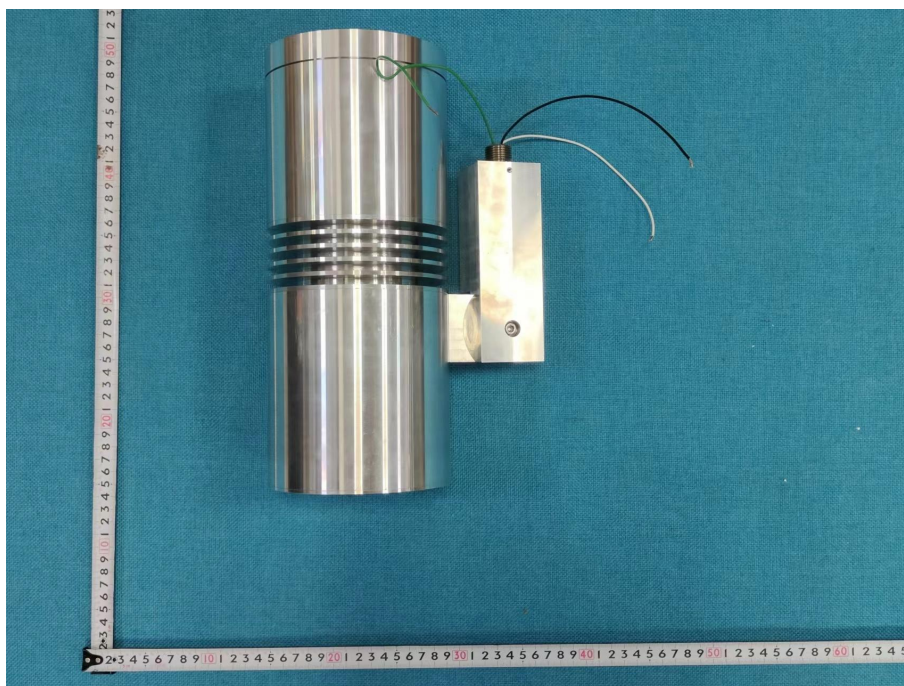


Figure 2 Overview

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